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API->Waxman, Henry A.

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F A X C O V E R S H E E T

TO :			
ATTN. :	Waxman, Henry A.		
FAX # :	202-225-4099		
FROM :	API		
FAX # :	202-682-8294		
VOICE :	202-682-8312		
DATE :	Thursday, February 10, 2005 01:48 pm		
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February 10, 2005

“Hockey Stick” Climate Warming Study Discredited

New research has revealed that a key study blaming humans for recent global warming is wrong because it used a flawed computer model.

The Original “Hockey Stick” Global Warming Study

- The widely cited 1998 global warming study by Dr. Michael Mann¹ produced the “hockey stick” temperature graph that shows 900-plus years of flat temperatures followed by a spike in the last few decades.
- Mann’s “hockey stick” was the central evidence cited by the Intergovernmental Panel on Climate Change (IPCC) that humans were already causing the climate to warm. It was also the basis for policy papers such as the December 2004 Arctic Climate Impact Assessment.

The Researchers and the Discovery

- Two Canadian analysts, Stephen McIntyre and Dr. Ross McKittrick, examined the original “hockey stick” research and found that, using Mann’s approach, even random data put into the climate model produced a hockey stick temperature pattern.²
- Mann’s “hockey stick” model misapplied a statistical tool called principal component analysis. In other words, the hockey stick is meaningless.
- McIntyre and McKittrick used correct statistical methods with the data and found that average temperatures for the 15th century actually exceed those of the 20th century. This research has been accepted for publication in *Geophysical Research Letters* and *Energy & Environment* (publications scheduled for February 2005).

Peer Review – What Other Scientists are Saying

- “[McIntyre and McKittrick] have uncovered a fundamental mathematical flaw in the computer program that was used to produce the hockey stick.”³ -- *Richard A. Muller, Berkeley physics professor*
- “It is strange that the climate reconstruction of Mann has passed both peer review rounds of the IPCC without anyone ever really having checked it.”⁴ -- *Dr. Rob van Dorland, climate scientist at the Dutch National Meteorological Agency and a lead IPCC author*
- McKittrick and McIntyre’s finding on the flawed Mann method is “entirely valid.”⁵ -- *Dr. Hans von Storch, climate scientist at the GKSS Research Center in Geesthacht, Germany and a lead IPCC author*

What It Means In the Debate on Climate Change

- The new research does not debunk the whole theory of global warming, simply the “hockey stick” claim, but it demonstrates that more scientific research is imperative.
- New policy initiatives must take into account our changed understanding. The Arctic Climate Impact Assessment and other reports based on Mann’s “hockey stick” must be re-evaluated.
- The IPCC should acknowledge the invalid “hockey stick” results and explain how earlier peer review of Mann’s research failed.

¹ Mann, M.E., Bradley, R.S. & Hughes, J.K. “Global-scale temperature patterns and climate forcing over the past six centuries,” *Nature* 392, (1998).

² “Hockey sticks, principal components and spurious significance,” *AGU Geophysical Research Letters*. “The M&M critique of the MBH98 northern hemisphere climate index: update and implications,” *Energy & Environment*.

³ *MIT Technology Review*.

⁴ *Financial Post*, January 28, 2005.

⁵ *Financial Post*, January 27, 2005.